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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/931,309	08/17/2001	Tetsuo Nakamura	Q65828	3931

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EXAMINER

CHEA, THORL

ART UNIT	PAPER NUMBER
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1752

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/931,309

Applicant(s)

NAKAMURA ET AL.

Examiner

Thorl Chea

Art Unit

1752

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-2, 4, 5 are rejected under 35 U.S.C. 103(a) as obvious over Usagawa et al, US Patent No. 5,057,406 (Usagawa) in view of The Theory Of The Photographic process, Fourth Edition, T.H. James, 1989 (James) .

Usagawa disclosed a silver halide material containing dye within the scope of the claimed invention. See the compound of Usagawa in column 12, compound 35 which contains a furan group vs compound of formula (I) of claims 1, 4 wherein Y is furan ring group; Z is an atomic group necessary to form 5-membered nitrogen atom ring, R is a substituted alkyl group and p is 0; compound in formula 4 when X⁵¹ and X⁵² is a carbon atom. The compound of Usagawa in column 11, compounds 31-34 vs the compound (XXX) in claim 5 Y⁶¹ is thiophene ring, X⁶¹ and X⁶² is carbon atom; R⁶¹ and R⁶² is a substitute alkyl group. James on page 203, Table 8.3 discloses electrochemical data of homologous series of cyanine dyes and related ionization/electron-affinity data. See especially nuclei in the first column, which show the heterocyclic group containing oxygen, sulfur, and carbon atoms. It would have been obvious to the worker of ordinary skill in the art at the time the invention was made to use the sulfur or oxygen atom in the heterocyclic nuclei of the dye of Usagawa with an expectation of achieving a highly useful dye, and thereby provide an invention as claimed. Closely related homologs,

Art Unit: 1752

analogs, isomers in chemistry may create a prima facie case of obviousness. In re Dillon 16 USPQ 2d 1897, 1904 (Fed. Cir. 1990); In re Payne 203 USPQ 245 (CCPA 1979); in re Mills 126 USPQ 513 (CCPA 1960); In re Henze 85 USPQ 261 (CCPA 1950); In re Hass 60 USPQ 544 (CCPA 1944).

3. Claims 1-2, 4-5, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Publication No. 2000-63690 (PN'690).

See the compound of formula (II) in the P'690, English abstract, which contains Y2 as O, S, Se, N, or C and Q is a group of nonmetallic atoms necessary to form a benzene ring having heterocyclic fused thereto; A2 a group necessary for forming a methine pigment. See also the dye in column 11-14 and the exemplified in columns 21-76 dyes D-1 to D-146 wherein the dyes contain a thiophene group associated therewith. The thiophene group substituted with a chlorine atom is shown in columns 36-37, compound 38.

The present claimed invention is directed to the claiming of specific ring associated with the dye. See claim 1 wherein Y is a furan ring and Z represents oxazole ring, a thiazole ring, an imidazole ring, a 2-pyridine ring or a 4-pyridine ring; claims 2 contains a generic rings Y-1 to Y-26; claim 5, formula (XXX) contains a thiophene ring, and claim 9 contains a thiophene ring having a halogen as substituent

The compounds disclosed in PN'690 is substantially similar to those claimed in the present claimed invention. It does not exemplify the furan group or pyrrole ring such as presented in claims 1, 11, but the furan group is within the scope of a group of nonmetallic atoms necessary to form a benzene ring having heterocyclic fused thereto disclosed in PN'690, and the oxygen atom or nitrogen atom belong to the same column of the periodic Table of the Chemical Element. The

Art Unit: 1752

worker of ordinary skill in the art would have expected that it provide a methine dye with similar properties. The condensed group in claim 2 is within the scope of generic formula II of PN'698 wherein Y₂ are each O, S, Se, N, or C and Q which is a heterocyclic compound such as thiophene group exemplified therein. A prima facie case of obviousness may be made when chemical compounds have very close structural similarity and similar utilities. "An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979). See *In re Papesch*, 315 F.2d 381, 137 USPQ 43 (CCPA 1963), and *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1991).

4. Claims 5-9 are rejected under 35 U.S.C. 103(a) as obvious over either JP62-204250 (JP'250) or JP61-277950 (JP'950) in view of either Parton et al (Parton) or Hioki et al (Hioki).

JP'250 and JP'950 each disclose the compound of the claimed invention, which contains a thiophene ring which is unsubstituted or substituted with halogen atom (chlorine). See JP'250 page 311, compounds 16-19; 20-22 and JP'950 page 576, compounds 102, 103; page 577, compounds 104-112. Both JP'250 and JP'950 fail to disclose the use of oxygen atom, a sulfur atom, a selenium atom, a nitrogen atom or a carbon atom in association within the nucleus containing a thiophene ring claimed in the present invention. However, the tellurium atom has been known as equivalence or analogues to oxygen atom, a sulfur atom, a selenium atom, a nitrogen atom or a carbon. Note for instance to Parton in column 2, lines 45-68 to column 3, lines 1-34 and Hioki in column 13, lines 11-68. It would have been obvious to the worker of ordinary skill in the art at the time the invention was made to use oxygen atom, a sulfur atom, a

Art Unit: 1752

selenium atom, a nitrogen atom or a carbon in lieu of tellurium atom with an expectation of provide a spectrally sensitizing dye with similar property.

Response to Arguments

Applicant's arguments filed December 17, 2004 have been fully considered but they are not persuasive. It is the examiner's position that the invention as claimed is prima facie obvious over the applied prior art shown above. The present invention is related to a methine dye that has been known in silver halide photothermographic material. The core issue in the present claimed invention is the association to the Y- group such as furan in claim 1, the heterocyclic compounds Y-1 to Y-26 in claim 2; the Y⁵¹ in claim 4 as furan ring; the Y⁶¹ in claim 4 as thiophene ring; thiophene ring substituted with V⁶¹, V⁸¹, V⁹⁵ as halogen in claims 6-9, and Y as "pyrrole ring" in claim 11 in association with the -Z- group would have been found obvious to the worker of ordinary skill in the art at the time the invention was made. The furan ring in claims 1-4 is a 5-member containing a oxygen atom; the thophene ring in claims 1,4 is a 5-member containing a sulfur atom; The pyrrole ring in claim 11 is a 5-member containing a nitrogen atom. The "Z" group such as such as thiazole ring, oxazole ring, imidazole ring, a selenazole ring, pyridine ring or a 5- or 6-membered carbocyclic and heterocyclic ring have been common ring of the methine dyes. See the ring discloses in James on page 203, Table 8.3 wherein the nuclei contain -S-, -Se-, -C- and -N-. See Table on page 199 which discloses a common heterocycles and derivation; Parton et al (US Patent 5,061,618) in column 2, lines 45-68, to column 3; and Hoki et al (US Patent no. 5,457,022) in column 11, compound (XI) to (XIII); Patent Abstract of Japan 2000-063690, Y¹ and Y². So -Z- ring having oxygen atom, sulfur atom, nitrogen atom or -C- atom are equivalent in a methine dye. The Patent Abstract of Japan 2000-063690 in the

Art Unit: 1752

abstract discloses Q is a group of non-metallic atoms necessary for forming benzene ring having a heterocycle fused thereto, and also exemplified the thiophene group, and thiophene group fused with a benzene ring in the Japanese document from [0057] to [0083], columns 21-72. Usagawa et al (US Patent No. 5,057,406) discloses cyanine dye having pyrolopyridine, thienopyrrole, furopyrrole nucleus. See the abstract and columns 3-15, compounds 1 to 44. . The compound of the claimed invention is a methine dye known to spectrally sensitize silver halide emulsion. The thiophene group and the heterocyclic group has been known to associated with the methine group to form a methine dye such as taught in the PN'690, JP'250 or JP'950. It would expect to the worker of ordinary skill in the art that the pyrrole group or furan group is equivalent to the thione group or other heterocyclic group containing chemical element of similar group. It is reminded that the rejection is based on the prima facie obviousness rejection. The issue in the case is whether the modification of the methine dye would have been found obvious over the applied prior art of record. It is the Examiner's position that the claimed dye would have been found prima facie obvious to the worker of ordinary skill in the art in the absence of showing the criticality of furan, pyrrole or thiophene and the substituent associated therewith.

In the previous office action the examiner note to column 35 of Usagawa et al. This part of the teaching should be "column 12, compound 35" instead of column 35.

It is agreed that the references do not teach exact combination of the heterocycles containing in the dye of the claimed invention. However, the rejections shown above are based on the on prima facie case of obviousness of rejection over the combination of the teaching of prior art of record. It is improper to argue against the references individually when a rejection based on the combination of references. In response to applicant's arguments against the references

Art Unit: 1752

individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

The difference between Usagawa et al is the -Z- ring wherein this ring contains -C-, S, Se or N found to be equivalent in James Table.3 nuclei in column 1, 2. The JP'690 exemplified the thiophene group and generically suggest Q as a hetrocyclic group which would encompasses the scope of pyrrole group, furan group or a nitrogen containing group claimed in claims 1-2, 4-5, 11-13. In response to the motivation to combine the references, it is the Examiner's position that the references the thiophene group and the furan or the hydrogen containing group is within the scope suggested in JP'690 which is within the meaning of a benzene ring having a heterocycle fused thereto taught in JP'690. The JP'690 exemplify the 5-membered heterocycle containing a sulfur atom equivalent to oxygen and nitrogen in the chemical periodic Table such as shown in the above rejection. The worker of ordinary skill in the art would have used the 5-membered heterocycle containing a sulfur atom including known its equivalent heterocycle group with an expectation of success for forming a methine dye useful in spectrally sensitizing the silver halide emulsion. "The prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Accordingly, it is believed that the rejection set forth above is still proper and should be maintained.

5. The objection to claim 4 set forth in the previous office action is withdrawn in view of the applicants' remark.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thorl Chea whose telephone number is (571) 272-1328. The examiner can normally be reached on 9 AM-5:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H Kelly can be reached on (571)272-1526. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 09/931,309

Page 9

Art Unit: 1752

Tchea 
March 11, 2005


Thorl Chea
Primary Examiner
Art Unit 1752